



17425 NE Union Hill Road, Suite 250  
Redmond, Washington 98052  
425.861.6000

December 23, 2020

Satterberg Foundation  
c/o Forterra  
901 5<sup>th</sup> Avenue, Suite 2200  
Seattle, Washington 98164

Attention: Alison Crowley

Subject: Response to Comments and Engineer of Record Transition  
Metropole Building Redevelopment  
421 2<sup>nd</sup> Avenue Extension South  
Seattle, Washington  
GeoEngineers File No. 24937-001-00  
SDCI Project No. 6508387-CN

The purpose of this letter is to provide responses to review comments issued by the Seattle Department of Construction and Inspections (SDCI) in the ECA GEOTECH Correction Notice No. 2 dated November 6, 2020; STRUCTURAL Correction Notice #2 dated October 8, 2020; and assume the role as geotechnical engineer of record for the Metropole Building Redevelopment project in Seattle, Washington.

GeoEngineers, Inc.'s (GeoEngineers') responses to the SDCI review comments are presented below using the same number system used in the SDCI comment letter. GeoEngineers has responded to review comments pertaining to the services that GeoEngineers has provided for the project. The remainder of the review comments will be responded to by other members of the project team.

GeoEngineers also completed geotechnical engineering review services and provided additional design recommendations in our geotechnical report review letter dated December 23, 2020.

## **RESPONSE TO SDCI COMMENTS (6508387-CN) – NOVEMBER 6, 2020 CORRECTION NOTICE #2 (ECA GEOTECH)**

### **Comment 1**

*SMC 22.170.110 A and Director's Rule 10-2009. Provide an addendum to the geotechnical report for design of the 3-inch pin piles. The report should include size and material requirements for the pin piles, installation and refusal criteria, and testing requirements, and allowable load capacity.*

GeoEngineers prepared a letter titled "Geotechnical Report Review Letter, Metropole Building Redevelopment, 421 2<sup>nd</sup> Avenue Extension South, Seattle, Washington" dated December 23, 2020 that



provides 3-inch-diameter pin pile recommendations. Please refer to this letter for the size and material requirements, installation and refusal criteria, testing requirements, and allowable load capacity.

#### **Comment 2**

##### **SMC 22.170.110 A. Micropiles**

*The geotechnical report recommends an ultimate adhesion value for the micropiles of 1 tsf within the very dense native soils. For a 7-inch diameter micropile and a bonded length of 25 feet, this results in an ultimate capacity of 90 kips, versus the allowable capacity of 125 kips shown on Sheet S200. Please revise the micropile design to be in accordance with the geotechnical recommendations and that accounts for a factor of safety for the micropile design.*

GeoEngineers provides allowable axial capacities for micropiles in the review letter dated December 23, 2020. The pile lengths for P1 through P8 will be adjusted to have a minimum bond length of 35 feet to provide 120 kips of axial capacity presented on the pile schedule on Sheet S200. We understand the structural plans will be revised to accommodate.

#### **Comment 3**

##### **SMC 22.170.110 A. Repeated and revised item. On Sheet S1.1, amend the notes as follows:**

*>Note 20, please provide driving criteria that will be sufficient to drive 3-inch-diameter pin piles. The driving criteria currently listed is more appropriate for a 2-inch pile. Also add a minimum 3-inch-diameter pin pile length required to penetrate to competent bearing soil without regard to driving criteria (this minimum length is not what will be required to achieve design capacity, but what is required to penetrate through peat and potential obstructions and achieve embedment in competent bearing soil).*

*>Notes 17 and 20, add the requirement that the Geotechnical Special Inspector shall be continuously present during pin pile and micropile installation and load testing.*

Driving criteria for 3-inch-diameter pin piles is provided in GeoEngineers' geotechnical report review letter dated December 23, 2020. The minimum length required to penetrate to competent bearing soil without regard to driving criteria is approximately 20 feet based on the borings completed by ADAPT Engineering. We also recommend that GeoEngineers be on site to continuously monitor pin pile and micropile installation in the report review letter described above, as required by the City of Seattle. We understand these notes will be added to the structural plans.

#### **Comment 4**

**SMC 22.170.190 A. Repeated Item. Provide a signed and stamped letter from the geotechnical engineer that includes review of the plans and provides a minimal risk statement in accordance with Director's Rule 5-2016. The plan review/minimal risk letter must be based upon review of plans with all substantial geotechnical recommendations incorporated.**

A summary of our plan review and minimum risk statement is provided below.



## **RESPONSE TO SDCI COMMENTS (6508387-CN) – OCTOBER 8, 2020 CORRECTION NOTICE #2 (STRUCTURAL)**

### **Comment 2**

*Provide a letter from the geotechnical engineer indicating that he/she has reviewed the foundation plans and that they conform to the soil report recommendations.*

A summary of our plan review and minimum risk statement is provided below.

### **PLAN AND DOCUMENT REVIEW, ASSUME GEOTECHNICAL ENGINEER OF RECORD**

We have reviewed the following for conformance with geotechnical design recommendations for the project:

- Geotechnical report prepared by ADAPT Engineering titled “Geotechnical Engineering Evaluation, Metropole Hotel Renovation, 423 2<sup>nd</sup> Avenue South Ext, Seattle, Washington 98104” dated May 5, 2016;
- Civil plans (C1.0 through C2.0 and Sheets 1 through 5) prepared by LPD Engineering, dated August 17, 2020; and
- Structural plans (S101 through S506) prepared by Swenson Say Fagét, dated August 23, 2016.

Based on our review, as described in our geotechnical report review letter dated December 23, 2020, we concur with the geotechnical findings and recommendations in the geotechnical report prepared by ADAPT Engineering dated May 5, 2016, except as noted in our December 23, 2020 review letter. We agree to take over the role of geotechnical engineer of record for the Metropole Building Redevelopment project.

### **STATEMENT OF MINIMUM RISK**

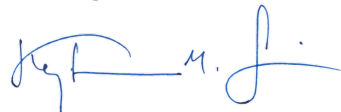
GeoEngineers has reviewed the civil and structural plans for the Metropole Building Redevelopment project for conformance with the recommendations in ADAPT Engineering’s report dated May 5, 2016 and GeoEngineers’ letter dated December 23, 2020. The plans are in conformance with the recommendations of that report and letter. In accordance with the SDCI Director’s Rule 5-2016, the following statement is made:

Provided the conditions and recommendations presented in ADAPT Engineering’s report and GeoEngineers, Inc. geotechnical report review letter are satisfied, the construction and development will not increase the potential for soil movement; and the risk of damage to the proposed development and from the development to adjacent properties from soil instability will be minimal. The use of the word “minimal” in the above statement should not be taken to imply that there is no risk, but rather that it is our opinion the risk is low.

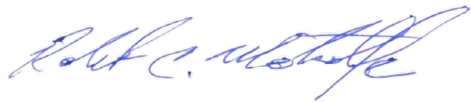


We trust this letter serves your current needs. Please call if you have any questions or require additional information.

Sincerely,  
GeoEngineers, Inc.

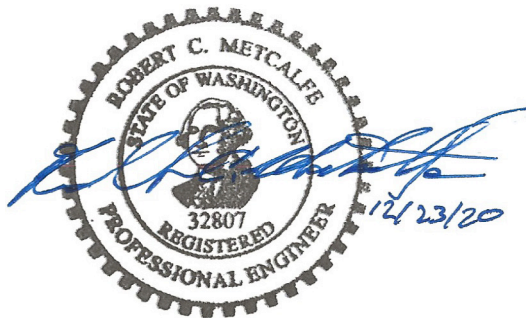


Kyle M. Smith, PE  
Geotechnical Engineer



Robert C. Metcalfe, PE  
Principal

CWM:KMS:RCM:nld



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☐ Revised Schedule

☐ Addition to Previous Schedule

☒ 2012 SEBC Prescriptive



## SDCI Geotechnical Inspections Schedule

**Project Number** 6508387-CN

**Date** 10/8/2020 10:28:51 AM

**Project Address** 423 2ND AV ET S  
SEATTLE, WA 98104

**SDCI Plan Examiner** Nouri Samiee-Nejad

**Architect**  
**Engineer**

**Architect Phone**  
**Engineer Phone**

Prior to issuance of a building permit, the owner, architect, or engineer acting on behalf of the owner shall appoint an inspection agency and shall sign and submit this form to the building official.

### Property Owner, Architect, or Engineer Signature

I hereby certify that the geotechnical engineer named below has been engaged to perform the special inspections outlined below as required by the Seattle Building Code. It is the responsibility of the owner or the owner's designee to notify the inspection agency or observer in a timely manner when the inspections listed below are required.

Signature

Architect  
Title

January 4, 2021  
Date

(206) 775-8671  
Phone

Mayes Testing Engineers, Inc.  
Geotechnical Engineering Firm Name

(425) 742-9360  
Geotechnical Engineering Firm Phone

### Required Special Inspections

Inspection Type	Description
1. Micropile Installation & Test	
2. Pin Pile Installation	3-inch-diameter
3. Pin Pile Installation Load Test	3-inch-diameter

**Call (206) 684-8860 to schedule a pre-construction conference before the start of construction**



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December 23, 2020

Satterberg Foundation  
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901 5<sup>th</sup> Avenue, Suite 2200  
Seattle, Washington 98164

Attention: Alison Crowley

Subject: Geotechnical Report Review Letter  
Metropole Building Redevelopment  
421 2<sup>nd</sup> Avenue Extension South  
Seattle, Washington  
File No. 24937-001-00

This letter summarizes our review comments for the geotechnical engineering report prepared by ADAPT Engineering for the Metropole Building redevelopment project located at 421 2<sup>nd</sup> Avenue Extension South in Seattle, Washington. The report prepared by ADAPT is titled “Geotechnical Engineering Evaluation, Metropole Hotel Renovation, 423 2<sup>nd</sup> Avenue South Ext, Seattle, Washington 98104” and is dated May 5, 2016. Our services are requested to review the existing report and provide comments or recommendations for potential changes to design recommendations in the existing report, if needed. Our review comments and/or recommendations for the report discussed herein consider the geotechnical elements of the design.

## **PROJECT DESCRIPTION AND SUBSURFACE CONDITIONS**

We understand the project consists of rehabilitation of the historic Metropole Building in Seattle’s Pioneer Square neighborhood. The Metropole Building is a multi-story brick building that is currently unoccupied. The property consists of King County Parcel Number 5247800595 and is bounded by Yesler Way to the north, 2<sup>nd</sup> Avenue South to the east, an adjacent building to the south, and an alley to the west.

Rehabilitation of the building will consist of construction of new stairways, a new elevator, and reconstruction of several elements in the building. Street improvements around the building consisting of new utility and grading work are also planned. We understand that new foundations will be constructed as part of the rehabilitation in the crawl space and basement levels of the building. New foundations will consist of 7-inch-diameter micropiles and 3-inch-diameter steel pipe (pin) piles. Structural improvements will also be completed throughout the building to resist seismic forces.

Subsurface conditions at the site were characterized by ADAPT Engineering by drilling two borings within the northern portion of the existing building. Both borings extended to a depth of 26.5 feet below the existing



ground surface. We also reviewed logs from existing borings completed within the site vicinity. Four soil units are documented at or near the site: fill, peat, beach deposits and glacial deposits. The fill generally consists of very loose to medium dense sand with varying amounts of silt and gravel. Brick and concrete debris, charcoal, and wood debris were encountered within the fill in some of the borings. The fill ranges in depth from about 7.5 to 17 feet below the ground surface (bgs). Very soft to medium stiff peat and organic silt was observed below the fill in some of the borings and was generally 2.5 to 5 feet thick. Beach deposits consisting of very loose to medium sand with varying amounts of silt and gravel, and very soft to very stiff silt with varying amounts of sand were encountered below/within the peat deposits. The beach deposits generally contained wood debris and were generally 10 to 15 feet thick. Glacially consolidated soils consisting of dense to very dense sand with varying amounts of silt and gravel were encountered below the soils described above and were observed to the depths explored in the borings. Interbedded silt and clay was observed within the glacially consolidated soils.

Perched groundwater within the beach deposits is interpreted by ADAPT Engineering at a depth of 14 feet bgs in both borings completed under the building. Static groundwater was interpreted by others at a depth of approximately 19 feet bgs within the vicinity of the site.

## REVIEW COMMENTS

Based on our review of the geotechnical report completed by ADAPT Engineering as well as other borings logs in the site vicinity, we have the following comments:

1. We are in general agreement with the subsurface characterization provided by ADAPT Engineering where the borings were drilled at the northern end of the building. We reviewed additional existing geotechnical information prepared by Metropolitan Engineers (1966) and Shannon & Wilson (2004). Site plans and selected borings from these projects are presented as attachments to this letter. Existing boring logs (DT-201 and B-22) are available near the southern end of the Metropole Building. The additional borings demonstrate that the contact to dense to very dense glacially consolidated soils ranges up to 37.5 feet below 2<sup>nd</sup> Avenue South grades. We recommend that the unbonded micropile length extend to at least 37.5 feet below 2<sup>nd</sup> Avenue South grades for P1 through P8 in the south part of the building. Alternatively, additional explorations may be completed to assess the depth to dense to very dense glacially consolidated soils.
2. The perched groundwater interpreted by ADAPT Engineering is likely the static groundwater table based on our experience at other sites within the project vicinity as well as boring logs completed by others within the site vicinity. Based on project and construction experience in the Pioneer Square area, the groundwater table ranges from Elevation 16 to 20 feet, which is about 15 to 20 feet below site grades.
3. The recommendations for temporary drainage, dewatering and subgrade preparation are generally appropriate for the site. For structural fill placed below slabs on grade, we recommend specifying Mineral Aggregate Type 2 or Type 17 (1¼-inch minus crushed rock or bank run gravel), City of Seattle Standard Specification 9-03.14
4. The City of Seattle intends to adopt the 2018 International Building Code on March 15, 2021. Given that the project was submitted for permit before this date, the 2012/2015 seismic design parameters provided in the geotechnical report are appropriate.
5. The drainage systems recommendations provided by ADAPT Engineering are appropriate for this project.



6. We recommend designing 7-inch-diameter micropiles for an allowable axial capacity of 3.5 kips per foot in the dense to very dense glacially consolidated soils below a depth of 20 feet. The micropiles should be embedded deep enough to achieve the required allowable axial capacity. Micropile installation should be observed by a representative of GeoEngineers.
7. Driven steel pipe pile recommendations are provided below.
8. The recommendations provided by ADAPT Engineering for structural fill materials and placement are appropriate for the project, with the exception that structural fill used for slab/footing subgrade should be compacted to 95 percent of the maximum dry density (MDD) in general accordance with ASTM International (ASTM) D 1557 test procedure. Structural fill placed below pavement and hardscapes on the site should be compacted to 95 percent of the MDD (ASTM D 1557) within the upper 2 feet, and may be compacted to 90 percent below the upper 2 feet. The City of Seattle requires that structural fill placed in the City Right-of-Way be compacted to 95 percent of the MDD (ASTM D 1557).

## DRIVEN STEEL PIPE PILE RECOMMENDATIONS

We understand that 3-inch-diameter driven steel pipe piles will be used for support of new foundations that will be constructed as part of this project. The pipe pile spacing should be determined by the project structural engineer. The pipe piles should be connected with a grade beam to help transfer loads between adjacent piles, as needed.

Steel pipe piles should be installed using pneumatic impact equipment capable of penetrating a sufficient depth to develop the design loads. McDowell Northwest Pile King of Kent, Washington has equipment capable of installing this type of pile. We recommend that the 3-inch-diameter pipe piles be designed for a maximum allowable axial capacity of 12 kips. This load was evaluated based on Allowable Stress Design (ASD), and is for combined dead plus long-term live loads and may be increased by one-third when considering design loads of short duration such as seismic forces. The allowable capacity is based on the strength of the supporting soils and includes a factor of safety of 3 for end bearing and 2 for shaft friction. The capacity applies to single piles. If piles are spaced at least three pile diameter on center, as recommended, no reduction of axial capacity for group action is needed, in our opinion.

The piles should be driven until practical refusal criteria is met to develop the required capacity. We anticipate the pipe piles will be driven at least 25 feet before achieving the required capacity based on the refusal criteria. The piles may be driven open-ended. We recommend that static load tests be completed in accordance with ASTM on a minimum of three percent of installed piles, up to five piles maximum, to verify actual capacity.

Typical refusal criteria for 3-inch steel pipe piles consists of less than 1 inch of penetration after 30 seconds with a 400-pound hammer (TB-125), after 10 seconds with a 850-pound hammer (TB-325), or after 2 seconds with a 2,000-pound hammer (TB-725). The practical refusal criteria depend on the hammer weight and model selected by the contractor and should be reviewed and approved by GeoEngineers prior to construction. Pile installation should be observed by a representative of GeoEngineers. Higher noise levels and vibrations during pile driving to install the steel pipe piles should be evaluated with respect to other building operations or foundations that may be sensitive to these impacts during foundation construction, if needed.

The structural characteristics of pile materials and structural connections may impose limitations on pile capacities and should be evaluated by the structural engineer.





We estimate that the post-construction settlement of pile foundations, designed and installed as recommended, will be on the order of ½-inch or less. Maximum differential settlement should be less than about one-half of the post-construction settlement. Most of this settlement will occur rapidly as loads are applied.

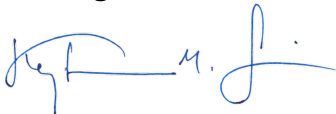
## REFERENCES

Metropolitan Engineers, 1966, "Final Report, Subsurface Investigation, Proposed Second Avenue Tunnel, Seattle, Washington."

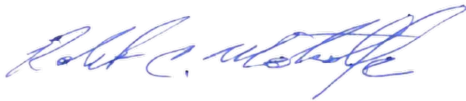
Shannon and Wilson, 2004, "Report Addendum No. 095-1, Geotechnical Data Report, Seattle Monorail Project, Seattle, Washington."

We trust that this letter meets your present needs. If you have any questions or need additional clarification, please call.

Sincerely,  
GeoEngineers, Inc.



Kyle M. Smith, PE  
Geotechnical Engineer



Robert C. Metcalfe, PE, LEG  
Principal

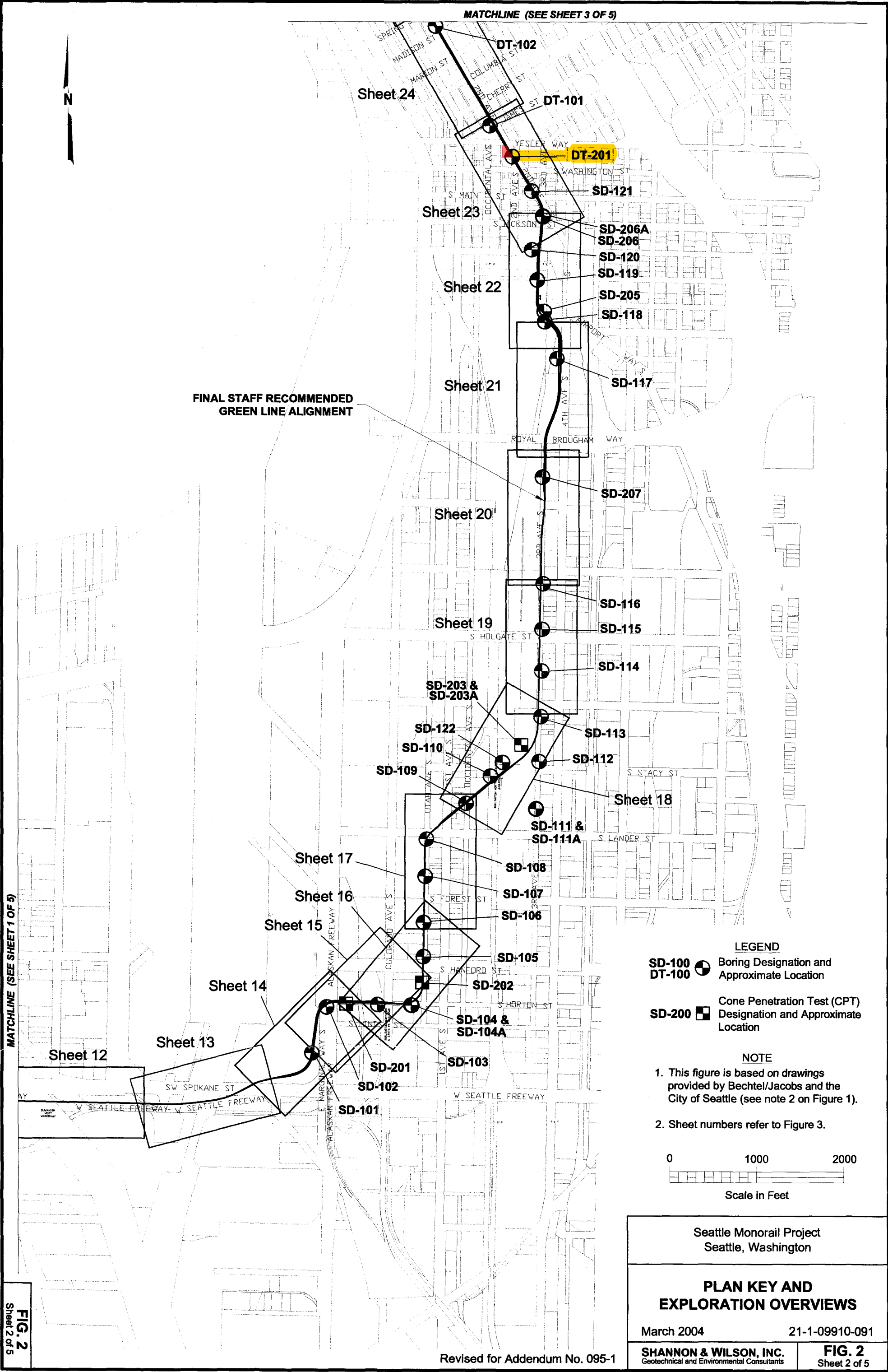
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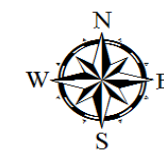
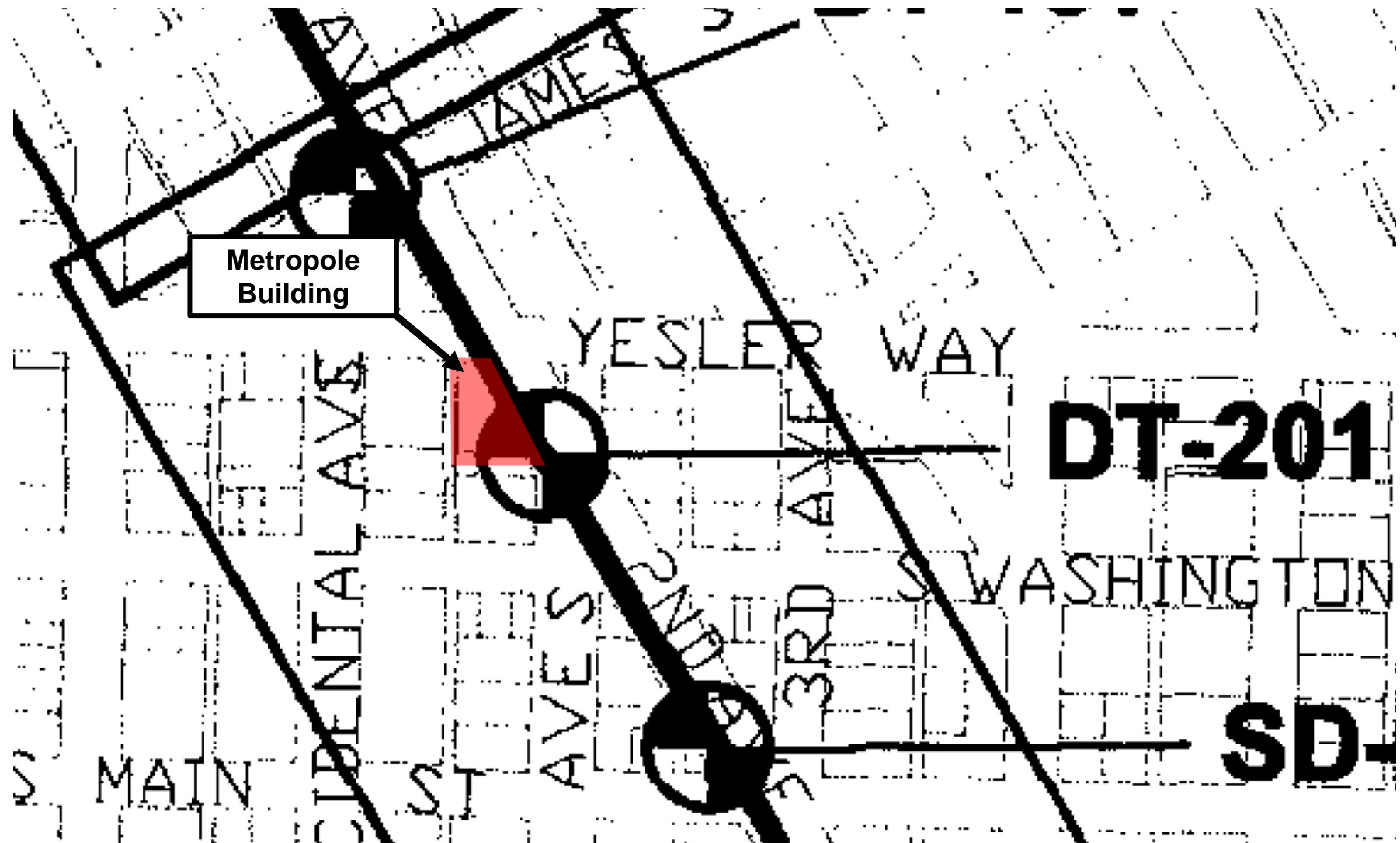
Attachments:

Additional Site Plans and Exploration Logs

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Not to Scale

Notes:

1. The locations of all features shown are approximate.
  2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document.
- GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

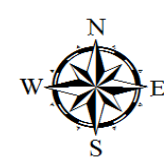
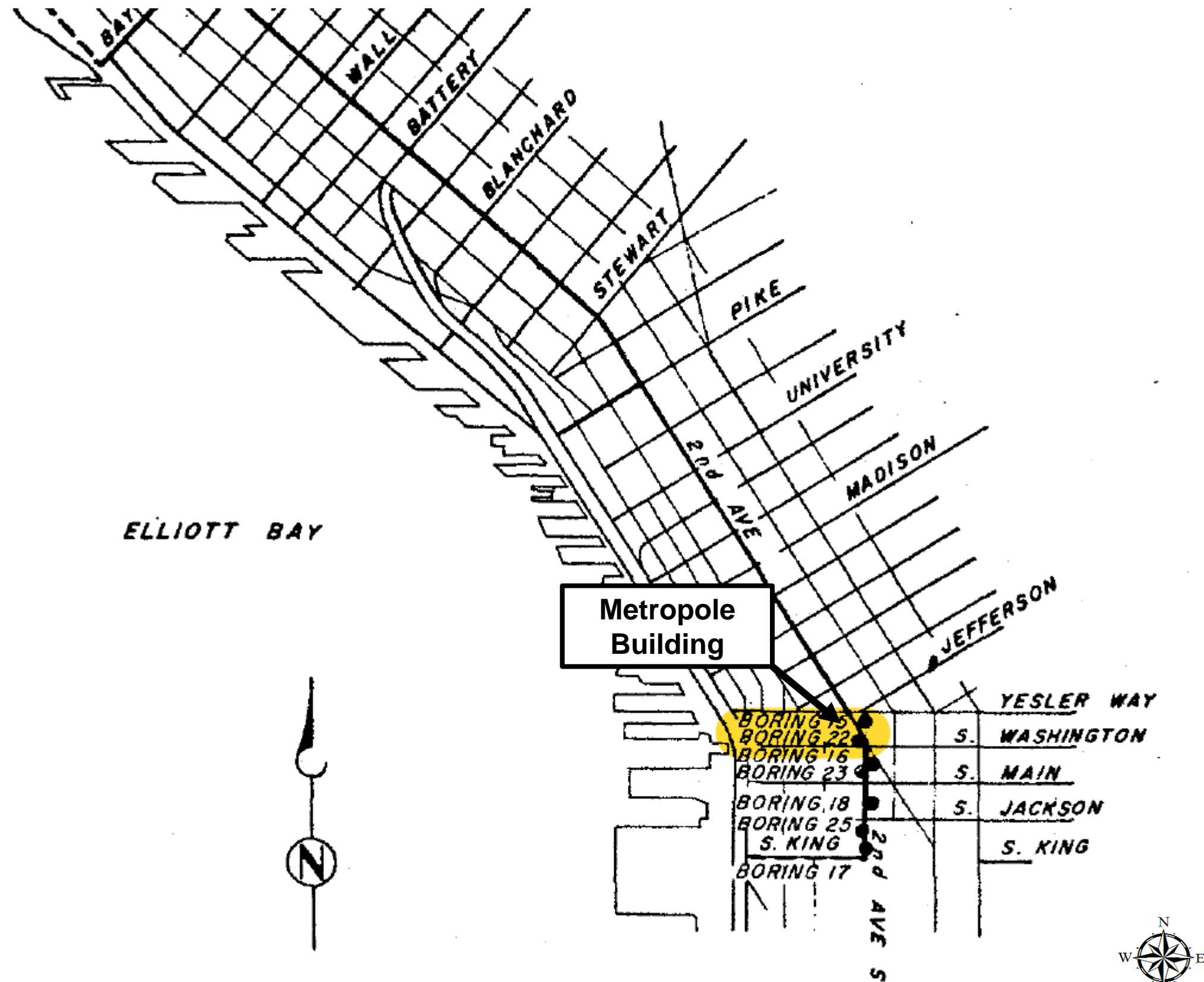
Data Source: Shannon and Wilson, 2004, "Report Addendum No. 095-1, Geotechnical Data Report, Seattle Monorail Project, Seattle, Washington."

2004 Shannon and Wilson Site Plan

Metropole Building Renovation  
Seattle, Washington



Figure 1



Not to Scale

Notes:

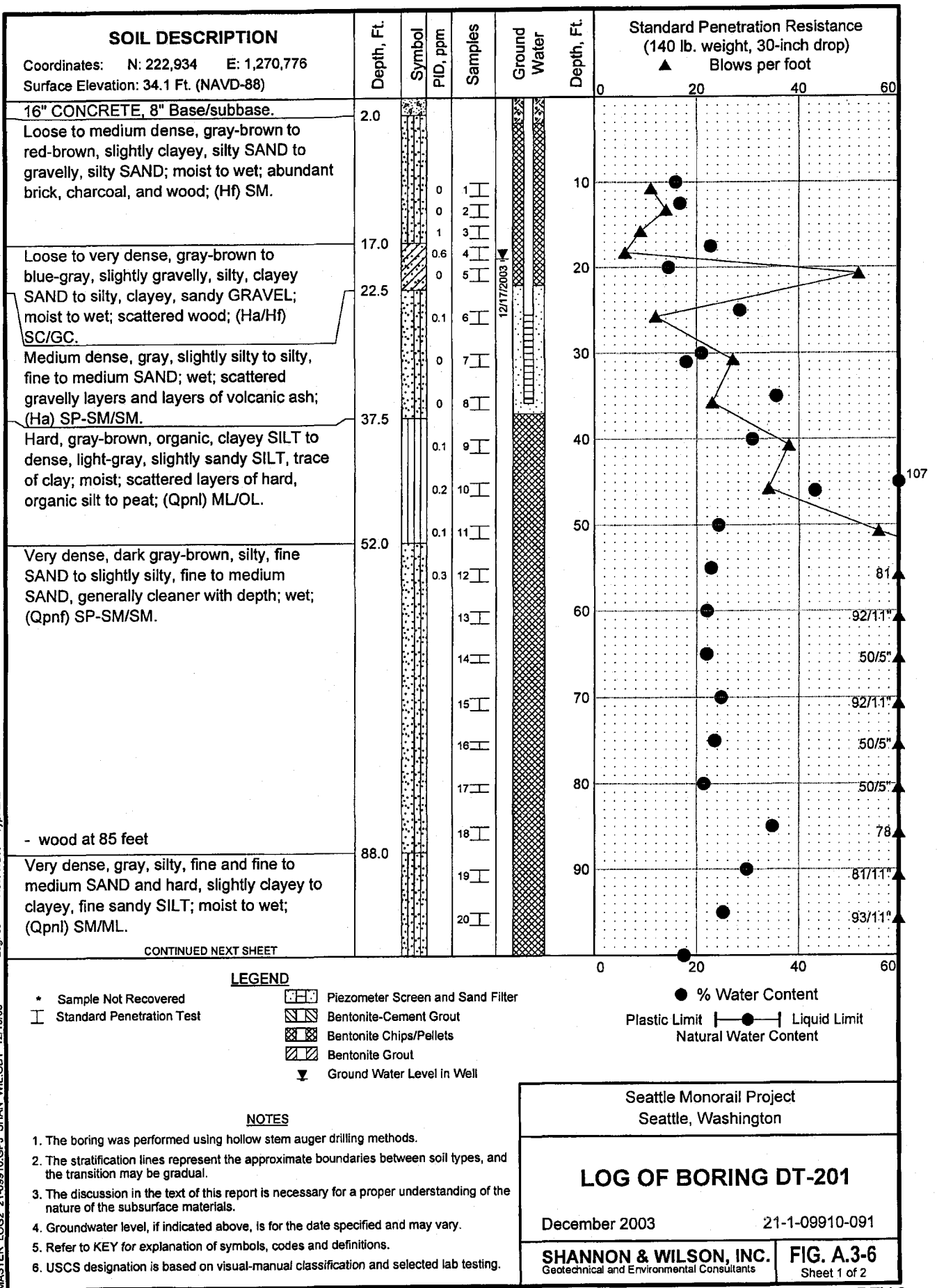
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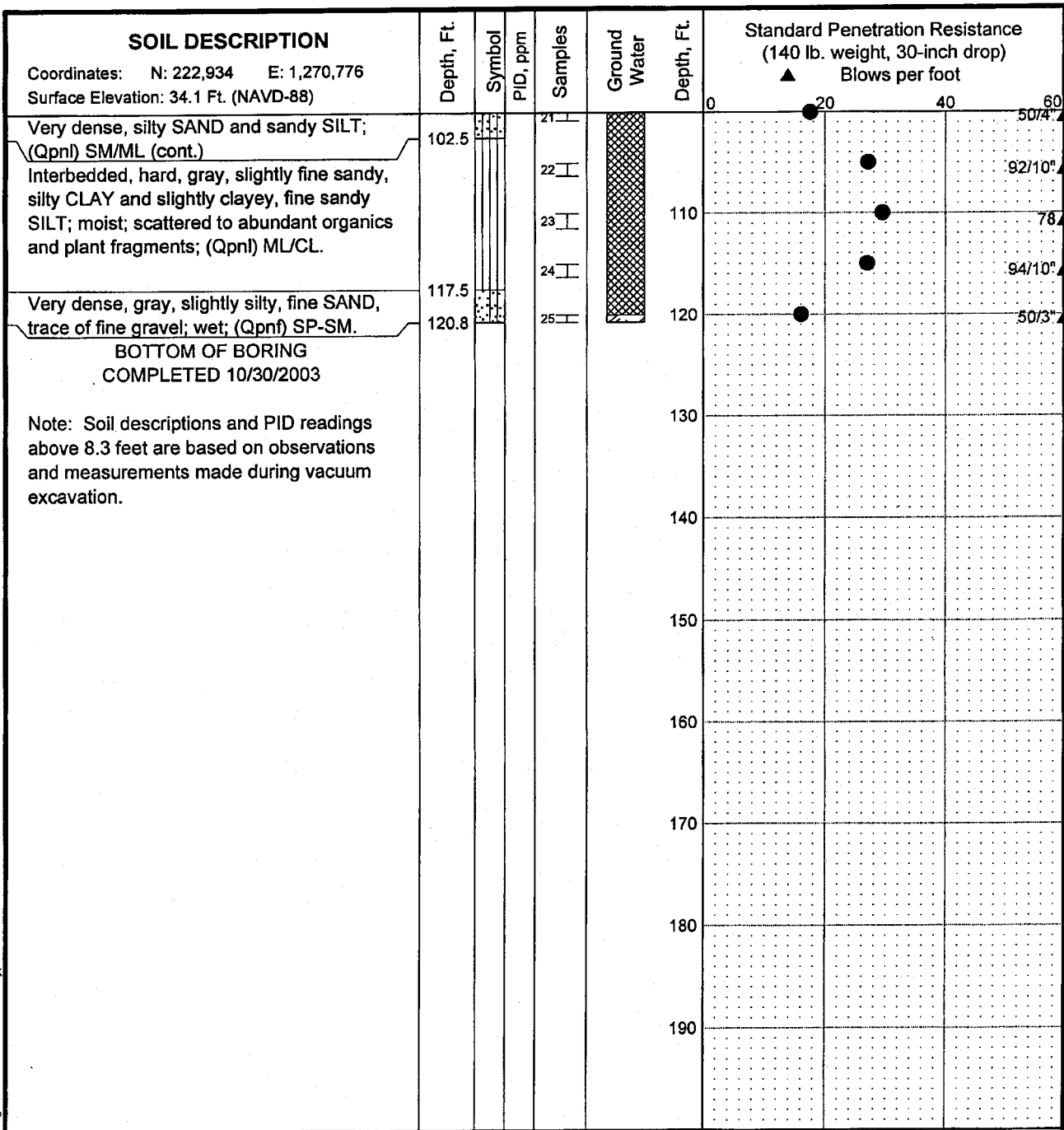
Data Source: Metropolitan Engineers, 1966, "Final Report, Subsurface Investigation, Proposed Second Avenue Tunnel, Seattle, Washington."

1966 Metropolitan Engineers Site Plan	
Metropole Building Renovation Seattle, Washington	
<b>GEOENGINEERS</b> 	Figure 2

MASTER LOG 21-09910.GPJ SHAN WIL.GDT 12/19/03 Log: JJ Rev: WDN Typ: LKD







Log: JJ Rev: WDN Typ: LKD MASTER LOG2 21-09910.GPJ SHAN WIL.GDT 12/19/03

#### LEGEND

- \* Sample Not Recovered
- Standard Penetration Test

- Piezometer Screen and Sand Filter
- Bentonite-Cement Grout
- Bentonite Chips/Pellets
- Bentonite Grout
- Ground Water Level in Well

- % Water Content
- Plastic Limit —●— Liquid Limit
- Natural Water Content

#### NOTES

- The boring was performed using hollow stem auger drilling methods.
- The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
- The discussion in the text of this report is necessary for a proper understanding of the nature of the subsurface materials.
- Groundwater level, if indicated above, is for the date specified and may vary.
- Refer to KEY for explanation of symbols, codes and definitions.
- USCS designation is based on visual-manual classification and selected lab testing.

Seattle Monorail Project  
Seattle, Washington

### LOG OF BORING DT-201

December 2003

21-1-09910-091

**SHANNON & WILSON, INC.**  
Geotechnical and Environmental Consultants

**FIG. A.3-6**  
Sheet 2 of 2

REV 3

ELEVATION - FT.

300  
250  
200  
150  
100  
50  
0

STATION

175+00

180+00

BORING 15  
LOCATION STA 176+10  
SEE PLATE 4

BORING 22  
LOCATION STA 177+40  
(10' RT)  
ELEVATION 130  
DRILLING DATE 3-14-66

BORING 16  
LOCATION STA 179+25  
(17' LT)  
ELEVATION 126.5  
DRILLING DATE 2-15 TO 17-66

BORING 23  
LOCATION STA 181+00  
(6' RT)  
ELEVATION 125  
DRILLING DATE 3-17, 18-66

BORING 18  
LOCATION STA 183  
(17' LT)  
ELEVATION 124  
DRILLING DATE 2-24

1889(?) GROUND  
SURFACE FROM  
CITY ENGINEERS  
RECORDS

BROWN-GRAY SILTY  
SAND, GRAVEL, WOOD  
(FILL)  
SEE NOTE 1  
SEE NOTE 2  
SEE NOTE 3  
DRILLS EASIER -  
SEEPAGE ?  
GRAY-BROWN SILT  
WITH DARK GRAY  
FINE SAND LENSES,  
SOME ORGANIC  
MATTER - FIRM

- NOTES:
1. GREEN-GRAY & RUSTY VERY FINE SANDY SILT AND SILTY FINE SAND
  2. GRAY SILTY VERY FINE-FINE SAND - DENSE CONTAINS SAND LENSES, SOME GRAVEL
  3. GRAY SANDY SILTY GRAVEL SILTY VERY FINE-FINE SAND & PEBBLY CLAY (CLAY TILL) - DENSE, FIRM
  4. WATER LEVEL NOT RECORDED. BORING BACKFILLED W/ PEA GRAVEL

GREENISH-BROWN SILTY FINE SAND WITH GRAVEL & LAYERS OF SILT & SANDY SILT (FILL) CONTAINS WOOD & BRICK - MODERATELY FIRM  
SAWDUST - SEE NOTE 1  
SEE NOTE 2  
GREENISH-GRAY GRAVELLY SANDY SILT & VERY FINE SILTY SAND (TILL) - DENSE & COMPACT  
DARK GRAY TO GREEN SAND & GRAVEL - CLEAN, DENSE  
SEE NOTE 3  
SEE NOTE 4  
LAMINATED GRAY TO BROWN ORGANIC SILT & FINE TO VERY FINE SAND

- NOTES:
1. CASING & BORING AT EL. 105 OVERNIGHT WL AT EL. 109
  2. SILTY PEAT, DECOMPOSED WOOD, SOME GRAY FINE TO MED. SILTY SAND LAYERS, SOME SMALL GRAVEL - SOFT TO VERY SOFT (TIDE MARSH DEPOSIT?)
  3. BROWN ORGANIC SILT W/ VERY THIN PEAT LAMINATIONS - VERY COMPACT
  4. CONTAINS ALT'G LAMINATIONS OF GRAY MEDIUM SAND W/ SMALL GRAVEL CASING AT EL. 10, BORING AT EL. 10, OVERNIGHT WL AT EL. 114
  5. CASING REMOVED AND BORING BACKFILLED WITH PEA GRAVEL

CONCRETE, WOOD, CONC. BROWN, GRAY & GREEN-GRAY SILTY SAND, SILT & SILTY SAND & GRAVEL (FILL)  
AFTER SAMPLE, WL AT EL. 104  
LAYERED GRAY FINE-MED. SAND, BROWN PEATY SAND, PEAT & PEATY SILT WITH WOOD - MODERATELY FIRM TO FIRM  
GREEN-GRAY & GRAY FINE-MED. SAND WITH SILTY SAND LAYERS - DENSE  
BORING BACKFILLED WITH PEA GRAVEL

GRAY TO BROWN SAND WITH GRAVEL - SOME SILT LAYERS (FILL) SEE NOTE 1  
SEE NOTE 2  
SEE NOTE 3  
LOOSE  
SEE NOTE 4  
SEE NOTE 5  
SEE NOTE 6  
GRAY TO GREYISH-SILTY FINE SAND - SMALL GRAVEL  
SEE NOTE 7  
SEE NOTE 8  
SEE NOTE 9  
SEE NOTE 10  
FINE TO VERY FINE LAMINATIONS

- NOTES:
1. GRADES TO GRAYISH-G. WITH BROWN SILTY FINE LAYERS. CONTAINS C & WOOD FRAGMENTS
  2. PARTIALLY DECOMPOSED SAWDUST & WOOD FRAGMENTS
  3. GRAY GRAVELLY SILTY SOME WOOD (CLINDE)
  4. GRADES LITTLE OR NO (BEACH DEPOSIT?) CASING AT EL. 94, BC OVERNIGHT WL AT EL.
  5. BROWN PEATY SILT & WOOD FRAGMENTS
  6. MIXED MED. TO COA SILTY PEAT & PART DECOMPOSED WOOD
  7. OCCASIONAL SMALL R SOME FINE TO VERY
  8. BROWN TO BLACK FINE PUMICE - SOME SILT - C SMALL ORGANIC MAT
  9. CONTAINS SILT LAYERS

Washington St

Main St